REMARKS

Claims 1-3, 9-17, 24-29 and 32 are pending and await further action on the merits.

Claims 14, 16, 17, 27 and 28 have been withdrawn from consideration as being drawn to non-elected subject matter.

[I] INTERVIEWS

Applicants note with appreciation that the Examiner has conducted interviews with Applicants' representative on November 16, 2004 and January 5, 2005. The Examiner was very helpful in clarifying her positions.

On the Interview Summary form reporting the November 16, 2004 Interview, the Examiner characterized the Interview as follows:

> Applicant's representative argued that the references do not fairly suggest incorporating the manganese dioxide into the composition disclosed by Highsmith.

Also, on the Interview Summary form reporting the January 5, 2005 Interview, the Examiner characterized the Interview as follows:

> Discussed the comparative results versus the invention results for CO and NOx concentration. Discussed option of filing a new declaration showing criticality of the location of the MnO2.

Further details of the interviews are given below.

[II] PRIOR ART BASED ISSUES

The following prior art based rejections are pending:

(A) Claims 1-3, 9-12, 15, 24-26, 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Highsmith et al. (U.S. Patent 5,682,014) in view of Castagner et al. (U.S. Patent 5,160,163) and Takase et al. (U.S. Patent 4,572,178);

(B) Claims 1-3, 9-12, 15, 24-26, 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (U.S. Patent 5,467,715) in view of Plantif et al. (U.S. Patent 3,964,256), Castagner et al. (U.S. Patent 5,160,163) and Takase et al. (U.S. Patent 4,572,178); and

(C) Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (U.S. Patent 5,467,715) in view of Plantif et al. (U.S. Patent 3,964,256), Castagner et al. (U.S. Patent 5,160,163), and Takase et al. (U.S. Patent 4,572,178) as applied to claims 1-3, 9-12, 15, 24-26, 29 and 39 above, and further in view of Mitson et al. (U.S. Patent 5,518,054).

Applicants respectfully traverse the rejections.

[IIA] Motivation Prong Of Obviousness Analysis Missing

The instant invention is drawn to a gas generant composition comprising manganese dioxide having a specific surface area not less than 50 m^2/g. Applicants maintain the position that the cited references fail to fairly suggest the use of the inventive

manganese dioxide having a specific surface area of not less than 50 m^2/g **in** (or as part of) the gas generant composition.

The Examiner notes that the primary references to Taylor et al. and Highsmith et al. only teach the use of a metal oxide and do not suggest the use of manganese dioxide having a specific surface area not less than 50 m^2/g, as presently claimed. For example, Highsmith et al. generically teach the use of a "metal oxide" (see column 4, lines 41-57) as a catalyst for use in the gas generant composition, and exemplifies in Examples 1-5 the use of copper oxide. In order to cure this deficiency, the Examiner cites Castagner et al., who teach an airbag device containing HOPCALITE, which is a mixture of copper oxide and manganese oxide, having a specific surface area of 217 m^2/g as taught by Takase et al. at column 5, lines 1-5. However, Applicants note that Castagner et al. use the HOPCALITE in the air bag separate from the gas generant composition. Applicants have again reviewed all of the cited references and cannot find sufficient motivation for the skilled artisan to use the HOPCALITE in the gas generant composition, as presently claimed.

During the Interview, the Examiner relied strongly upon the generic description in the Background of the Art section of Highsmith et al. as a source for the motivation for the skilled

artisan to look to Castagner et al. for the MnO_2 having the inventive surface area characteristics.

However, Applicants note that Highsmith et al. only state that a goal is to reduce CO. There is no teaching or suggestion by Highsmith et al. that using MnO_2 (of any type - including HOPCALITE) **in** the gas generant composition would reduce CO. In fact, it is unclear whether Highsmith et al. is referring to the use of additives or to controlling the types of components used to generate the gas discharge or to adding MnO_2 to a separate bag as in Castagner et al. Furthermore, adding to the ambiguity, is the fact that Highsmith et al. do not test for the amount of CO produced in the exemplified embodiments, which would lead one to conclude that reducing CO is not an object of Highsmith et al.'s invention. Accordingly, the skilled artisan would not find the generic description in the Background of the Art section of Highsmith et al. as a source for the motivation to look to Castagner et al. for the use of MnO_2 having the inventive surface area characteristics in the gas generant composition.

With respect to Taylor et al., the Examiner also looks to the Background of the Invention section for motivation to look to Castagner et al. for the use of MnO_2 having the inventive surface area characteristics in the gas generant composition. The Examiner

supports the motivation prong of the rejection with the teachings of Plantiff et al.

The Examiner relies on Taylor et al.'s teaching that a goal is to reduce the combustion temperature which would then reduce the amount of CO produced. However, Taylor et al. teach that the means for reducing the combustion temperature is to avoid azole oxidizer based gas generant compositions. Taylor et al. suggest the use of manganese oxide as an additive to promote the oxidation effect of the copper oxide and to further act to catalyze combustion. However, there is no teaching or suggestion to use MnO_2 having the inventive surface area characteristics.

The Examiner supports the motivation prong with the teachings of Plantiff et al. The reference to Plantiff et al. discusses that MnO_2 can be used to decrease the decomposition temperature. The Examiner is equating the goal in Taylor et al. of reducing the combustion temperature to thereby reduce CO output with the teaching in Plantiff et al. that MnO_2 reduces the decomposition temperature, and similarly would reduce the CO output. However, Applicants note that Plantiff et al. use the MnO_2 **in a separate chamber** from the gas generant composition. The object in Plantiff et al. is similar to the object in Castagner et al. of affecting the gas (properties or composition), which has already been

generated. There is no suggestion in Plantiff et al. to use the MnO_2 in the gas generant composition, as presently claimed. Accordingly, the motivation prong is not supported with the teachings of Plantiff et al. as asserted by the Examiner.

Upon careful review of all the cited references, Applicants find that the only cited reference which suggests MnO_2 can adsorb CO is Castagner et al. Again, Castagner et al. do not cure the deficiencies in the other cited references, since Castagner et al. only teach the use of MnO_2 in a separate location from the gas generant composition.

Applicants respectfully submit that the skilled artisan would not be motivated to modify the gas generant composition of Highsmith et al. or Taylor et al. by adding HOPCALITE **in** the gas generant composition, since Castagner et al. teach that HOPCALITE is used ***separately*** from the gas generating composition. The HOPCALITE is used in the air bag for absorbing or dissociating carbon monoxide, which is blown into the bag during inflation.

Furthermore, Castagner et al. do not exemplify the use of HOPCALITE or any other product taught to be capable of absorbing or dissociating carbon monoxide in the inflatable bag.

Accordingly, at best, the Examiner has combined references that make the inventive composition "obvious to try". The courts

have determined that the "obvious to try" standard does not meet the requirements for obviousness under 35 USC 103. *In re Tomlinson*, 150 U.S.P.Q. 623 (C.C.P.A. 1966). In *In re O'Farrell*, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988), the Federal Circuit gave some examples of what would constitute an "obvious to try" modification based on the prior art noting that "In some cases, what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possible arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful."(citations omitted).

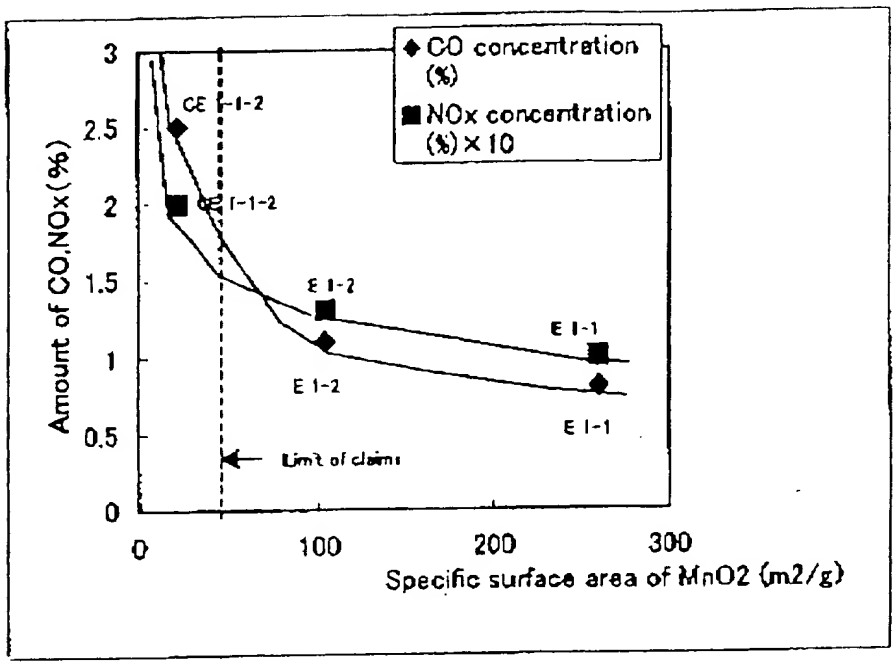
Based on the foregoing, a *prima facie* case of obviousness cannot be said to exist based on the combinations of references made by the Examiner. As such, withdrawal of the rejections is respectfully requested.

[IIB] New Rule 132 Declaration

Even assuming *arguendo* that a *prima facie* case of obviousness does exist, Applicants respectfully submit that the experimental results in the enclosed unexecuted Declaration under 37 CFR 1.132 by Mr. Shogo Tomiyama (an executed Declaration will follow) is evidence that the inventive configuration wherein the MnO_2 is located in the composition, provides unexpected advantages not seen in configurations where the MnO_2 is separate from the composition as described by Plantiff et al. and Castagner et al.

The improvements in reduction of CO and NO_x in the generated gas using manganese dioxide having a specific surface area not less than 50 m^2/g **in** (or as part of) the gas generant composition can be seen in the following table and graph which contains data obtained from the present specification:

	Comparative Example 1-1-2	**Inventive Example 1-2**	**Inventive Example 1-1**
Specific Surface Area of MnO_2 (m^2/g)	21.5	104	260
CO concentration (%)	2.5	1.1	0.8
NO_x concentration (%)	2000	1300	1000

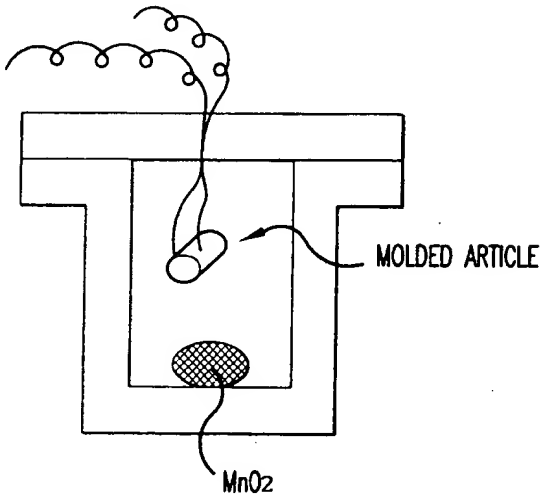


The gas generant composition of Inventive Example 1-2 having a specific surface area of MnO_2 of 104 m^2/g shows a **56%** reduction in CO detected in the generated gas over the gas generant composition of Comparative Example 1-1-2. Also, the reduction in NO_x detected in the generated gas is **35%**. There are even higher levels of improvement when comparing the gas generant composition of Inventive Example 1-1 with the gas generant composition of Comparative Example 1-1-2.

In addition, the improvements are even greater when the above-described experiments are performed by keeping the MnO_2 in the air

bag **separate** from the gas generant composition as taught by Castagner et al. and Plantiff et al.

The tests were carried out by burning molded articles of 5 gas generating agents in a vessel configured as shown in the figure below with respect to Samples **(3)-(5)**.



The 5 gas generating agents are described in the following table.

Sample	Used material	Configuration	CO (ppm)
(1)	5AT/GN/$NaNO_3$/CuO	blank - no MnO_2	130
(2)	5AT/GN/$NaNO_3$/CuO/MnO_2	MnO_2 kneaded in	113
(3)	5AT/GN/$NaNO_3$/CuO, MnO_2	MnO_2 placed aside	130
(4)	5AT/GN/$NaNO_3$/CuO, MnO_2	MnO_2 placed aside	120
(5)	5AT/GN/$NaNO_3$/CuO, MnO_2	MnO_2 placed aside	130

5AT is 5-amino-tetrazole. GN is guanidine nitrate.

Sample (2) is an inventive sample, since the MnO_2 is kneaded directly into the molded article as described in the inventive claims.

In Samples (3), (4) and (5), MnO_2 was laid on the bottom wall of the vessel separate from the molded article composition.

The composition of Sample (2) includes 16.42 parts by weight of 5AT, 11.64 parts of GN, 1.46 parts of $NaNO_3$, 68.98 parts of CuO and 1.50 parts of MnO_2. The MnO_2 was kneaded into the composition.

The composition of Samples (1), (3), (4) and (5) contain 16.67 parts by weight of 5AT, 11.82 parts of GN, 1.48 parts of $NaNO_3$ and 70.03 parts of CuO.

For Samples (3), (4) and (5), 1.5, 3 and 500 parts by weight of MnO_2, respectively were used as the fuel catalyst, with the MnO_2 as a separate entity and not being part of the gas generant

composition as in the configuration of Castagner et al. and Plantiff et al.

Comparative Sample **(1)** is equivalent to the showing of the Taylor reference. Inventive Sample **(2)** falls within the scope of the presently claimed invention, which is a kneaded mixture of the gas generating agent and MnO_2 as a catalyst. Comparative Samples **(3)** - **(5)** are equivalent to the showing of the Castagner et al. and Plantiff et al. reference.

It is noted from the test results that Sample **(2)** is superior to Sample **(1)** in view of reduction of CO. Sample **(3)** is equal to Sample **(1)** in reduction of CO, in that no reduction effect was seen. Samples **(3)**, **(4)** and **(5)** are inferior to Sample **(2)** in the reduction of CO. Also Samples **(3)**, **(4)** and **(5)** showed that there is no relationship between amount of MnO_2 and CO absorption when MnO_2 is not kneaded in the composition. No effect is seen with such a large amount of MnO_2 present in Sample **(5)**.

Based on these results, Mr. Tomiyama concludes that the inventive composition is not made obvious over the cited references, since these results would be **unexpected** based on the teachings of the cited references. No combination of the cited references teaches or fairly suggests that the presence of the manganese dioxide having a specific surface area not less than 50

m^2/g **in** (or as part of) the gas generant composition gives the gas generant composition such superior properties to the configuration where the same components are used except that MnO_2 is not an intimate part of the composition.

Accordingly, even if a *prima facie* case of obviousness were to exist, the *prima facie* case would be removed based on the experimental results described in the enclosed Declaration.

Conclusion

Applicants respectfully submit that the claims are in condition for allowance. A Notice to such effect is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Garth M. Dahlen, Ph.D., Esq.** (Reg. No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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RCS/GMD/mua
0425-0846P

Attachments: Unexecuted Declaration under 37 CFR 1.132 by Mr. Shogo Tomiyama